

FORMULAS WHICH YOU NEED TO KNOW FOR THE TEST

Sum of the Angle Formulas:

Sum of Interior Angles = $(n-2) \cdot 180$

Sum of Exterior Angles = 360

Individual Angles of a REGULAR polygon:

Each Interior Angles = $\frac{(n-2) \cdot 180}{n}$

Each Exterior Angle = $\frac{360}{n}$

1. Determine each of the following for a regular 18-gon.

a. Sum of the interior angles.

$180 \cdot 16 = 2880^\circ$

b. Measurement of one interior angle.

$\frac{2880}{18} = 160^\circ$

c. Sum of the exterior angles.

360°

d. Measurement of one exterior angle.

$\frac{360}{18} = 20^\circ$

2. Name the regular polygon which has each interior angle equal to 140°

$\frac{180(n-2)}{n} = 140$

$180(n-2) = 140n$

$180n - 360 = 140n$

$-360 = -40n$

$9 = n$

9 sides \rightarrow nonagon

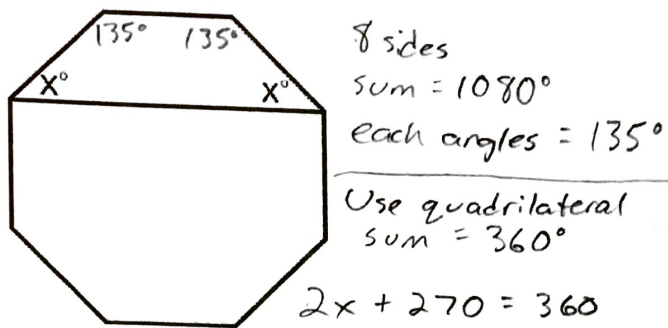
3. Each exterior angle of a regular polygon measures 24° . Find the sum of the interior angles of that polygon.

$\frac{360}{24} = 15 \text{ sides}$

$180(15-2) = \boxed{2340^\circ}$

4. Find the missing variable in each of the polygons below.

a. Regular Polygon



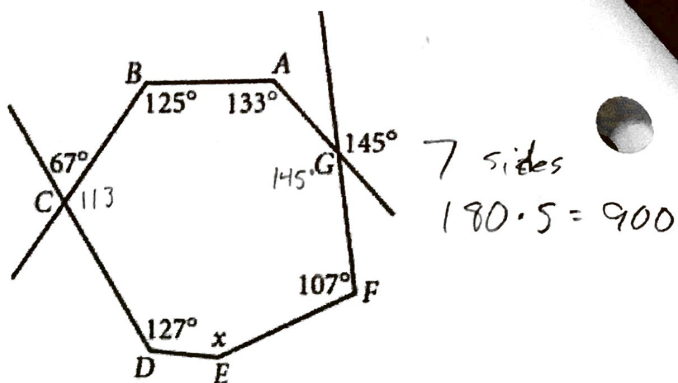
$$2x + 270 = 360$$

$$2x = 90$$

$$x = 45$$

$$\boxed{45^\circ}$$

b.

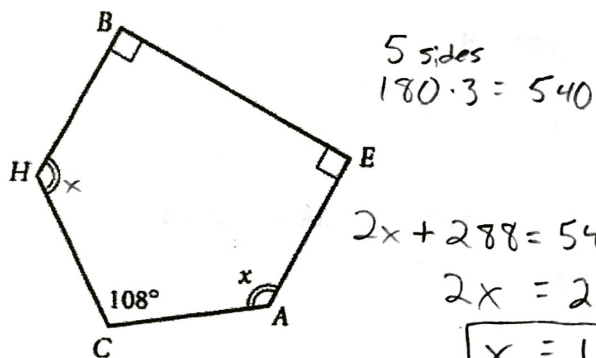


$$x + 127 + 113 + 125 + 133 + 145 + 107 = 900$$

$$x + 750 = 900$$

$$\boxed{x = 150^\circ}$$

c.

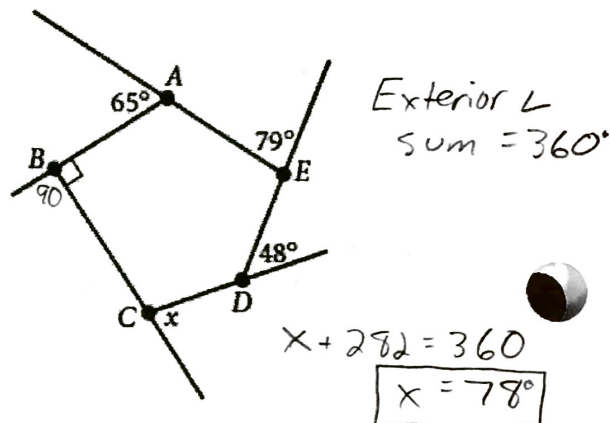


$$2x + 288 = 540$$

$$2x = 252$$

$$\boxed{x = 126^\circ}$$

d.



$$x + 282 = 360$$

$$\boxed{x = 78^\circ}$$

Use the shapes to answer the following questions.

5. $x = \underline{53}$

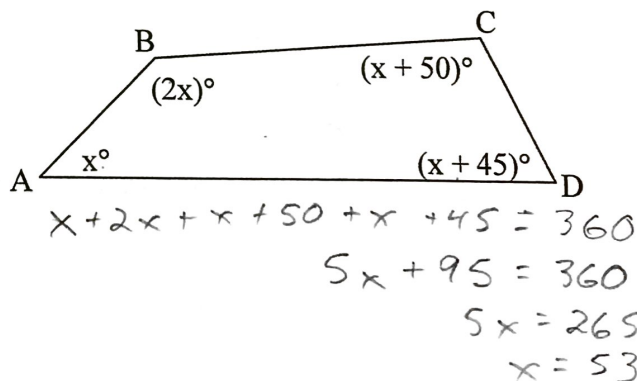
6. $m\angle A = \underline{53^\circ}$

7. $m\angle B = \underline{106^\circ}$

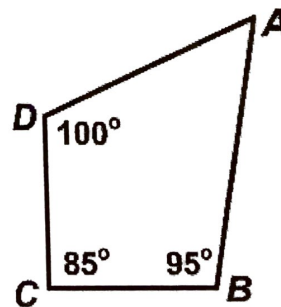
8. $m\angle C = \underline{103^\circ}$

9. $m\angle D = \underline{98^\circ}$

10. $m\angle A = \underline{80^\circ}$



$$m\angle A = 360 - 100 - 85 - 95 =$$

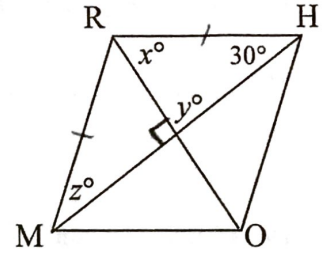


11. Use the rhombus RHOM to find the value of x , y , and z .

$x = \underline{60^\circ}$

$y = \underline{90^\circ}$

$z = \underline{30^\circ}$

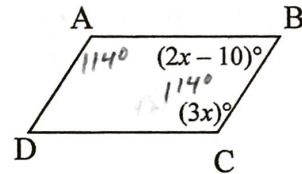


Use parallelogram ABCD to answer questions 12-14.

12. \overline{AB} is parallel to $\underline{\overline{CD}}$.

13. $\overline{BC} \cong \underline{\overline{AB}}$.

14. $x = \underline{38}$ and $m\angle A = \underline{114^\circ}$.



$2x - 10 + 3x = 180$

$5x - 10 = 180$

$5x = 190$

$x = 38$

$m\angle C = 3 \cdot 38 = 114$

Use rectangle DEFG to answer 15-17.

15. If $\angle DGW = 5x + 30$ and $\angle FGE = x$, $x = \underline{10}$ and $m\angle DGW = \underline{80^\circ}$.

$5x + 30 + x = 90$

$6x = 60$

$x = 10$

16. If $DF = 4x + 12$ and $GW = x + 8$, then $x = \underline{2}$.

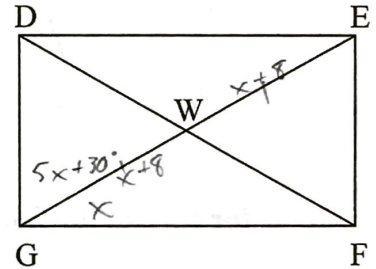
$x + 8 + x + 8 = 4x + 12$

$2x + 16 = 4x + 12$

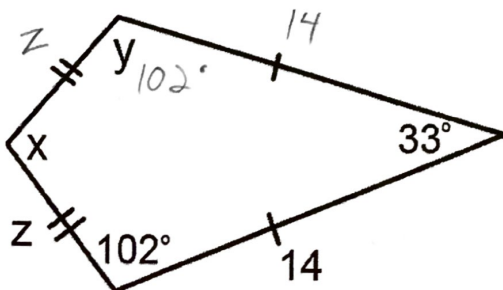
$16 = 2x + 12$

$4 = 2x$

$2 = x$



17. Find the missing variables in the kite below if the perimeter is 38.



$2z + 28 = 38$

$2z = 10$

$z = 5$

$x = \underline{123^\circ}$

$x = 360 - 102 - 102 - 33$

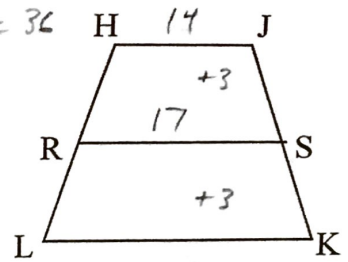
$y = \underline{102^\circ}$

$x = 123$

$z = \underline{5}$

For 18-21, figure LKJH is an isosceles trapezoid with midsegment \overline{RS} .

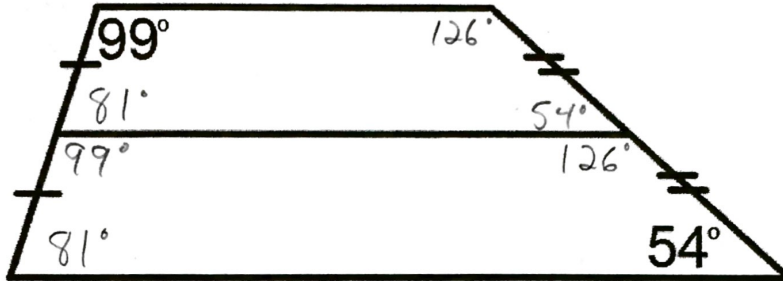
18. If $LK = 30$ and $HJ = 42$, then $RS = \underline{36}$. $\frac{30+42}{2} = \frac{72}{2} = 36$



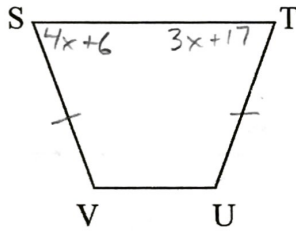
19. If $RS = 17$ and $HJ = 14$, then $LK = \underline{20}$.

or $\frac{14+x}{2} = 17$
 $14+x = 34$
 $x = 20$

20. Find all of the missing angles in the trapezoid below.



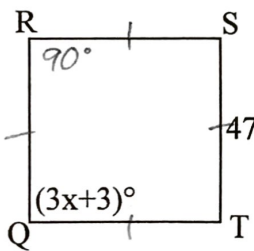
21. STUV is an isosceles trapezoid. $\angle STU = 3x + 17$ and $\angle TSV = 4x + 6$, find x .



$4x + 6 = 3x + 17$
 $x + 6 = 17$
 $x = 11$

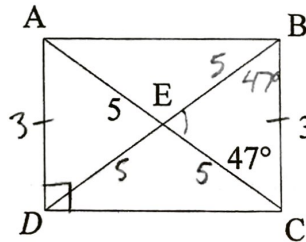
Solve for each of the following.

23. square QRST



$m\angle R = \underline{90^\circ}$
 $QT = \underline{47}$
 $x = \underline{29}$
 $3x + 3 = 90$
 $3x = 87$
 $x = 29$

24. rectangle ABCD

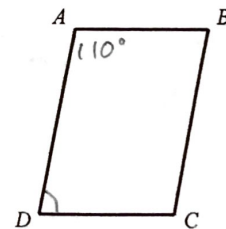


$m\angle ADC = \underline{90^\circ}$
 $DB = \underline{10}$
 $AD = \underline{3}$
 $m\angle BEC = \underline{86^\circ}$

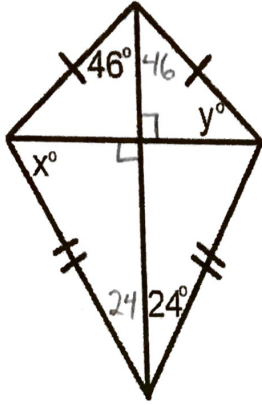
$m\angle BEC = 180 - 47 - 47$

24. ABCD is a parallelogram. If $m\angle DAB = 110^\circ$, find $m\angle ADC$.

$m\angle ADC = 180 - 110 = \underline{70^\circ}$



25. Find the value of x and y in the kite below.



$$y = 180 - 90 - 46 = 44$$

$$x = 180 - 90 - 24 = 66$$

26. Find the values of a and b .

$$b + 122 = 180$$

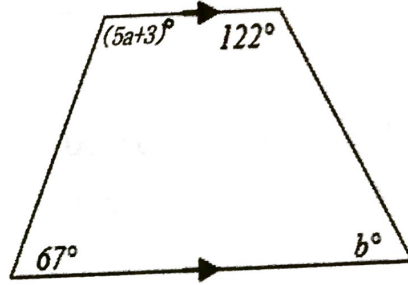
$$\boxed{b = 58}$$

$$5a + 3 + 67 = 180$$

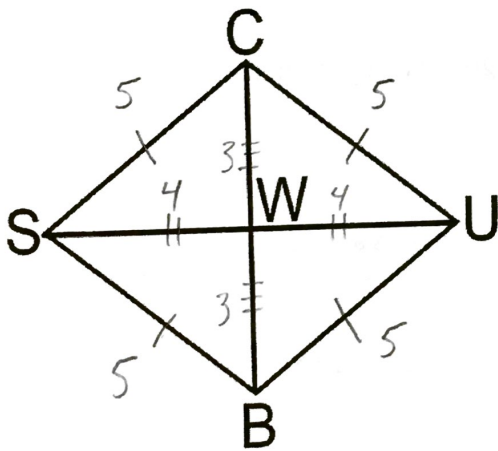
$$5a + 70 = 180$$

$$5a = 110$$

$$\boxed{a = 22}$$

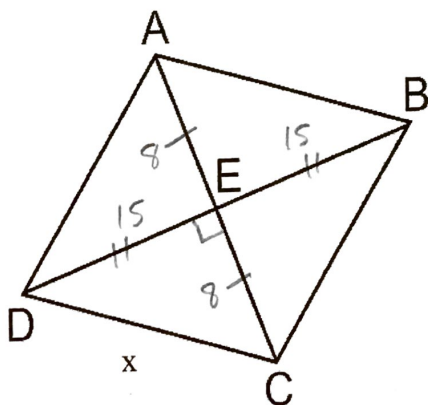


27. CUBS is a rhombus with a perimeter of 20, $SU = 8$ and $WB = 3$. Find the perimeter of $\triangle CWU$.



$$\text{Perimeter of } \triangle CWU = 3 + 4 + 5 = \boxed{12}$$

28. ABCD is a rhombus with $m\angle DEC = (5x + 5)^\circ$, $AC = 16$, and $BD = 30$. Find x and the perimeter of the rhombus.



$$5x + 5 = 90$$

$$5x = 85$$

$$x = \boxed{17}$$

$$\text{Perimeter} = 17 \cdot 4 = \boxed{68}$$

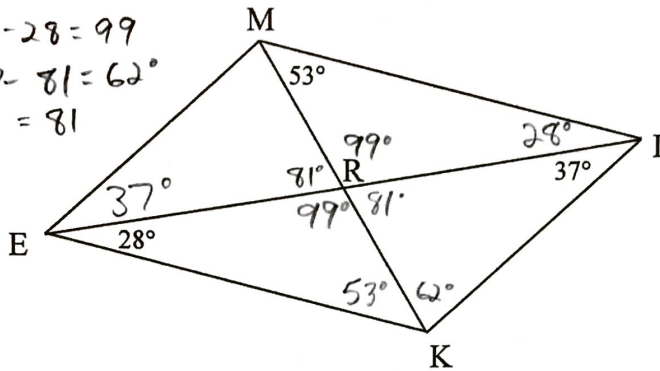
Use the parallelogram below to answer questions

Use Alternate Interior Angles

30. $180 - 53 - 28 = 99$

32. $180 - 37 - 81 = 62$

33. $180 - 99 = 81$



29. $m\angle MIK = \underline{65^\circ}$

30. $m\angle MRI = \underline{99^\circ}$

31. $m\angle RKE = \underline{53^\circ}$

32. $m\angle RKI = \underline{62^\circ}$

33. $m\angle MRE = \underline{81^\circ}$

Fill in the blank with TRUE or FALSE.

T 34. If a parallelogram has perpendicular diagonals, then it is a rhombus.

T 35. If a quadrilateral is a square, then it has four right angles.

F 36. If a quadrilateral has four right angles, then it is a square. *could be rectangle*

T 37. If the diagonals of a parallelogram are congruent and perpendicular, then the parallelogram is a square.

T 38. If a parallelogram has congruent diagonals, then it is a rectangle.

T 39. If a quadrilateral is a rectangle, then it has four right angles.

T 40. All squares are rectangles.

F 41. All rectangles are squares. *NOT if all 4 sides aren't congruent*

T 42. All rectangles are parallelograms.

F 43. All parallelograms are rectangles. *could be just a parallelogram or rhombus*

F 44. The opposite angles of a trapezoid are supplementary. *only for isosceles trapezoids*

T 45. The opposite angles of an isosceles trapezoid are supplementary.